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Statistics Canada

1991 Census Technical Reports

Families

Reference Products series

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1994 International Year of the Family

The objectives of the International Year of the Family are to "highlight the importance of families; increase a better understanding of their functions and problems; ... and focus attention upon the rights and responsibilities of all family members".



United Nations

Note of Appreciation

Canada owes the success of its statistical system to a long-standing cooperation involving Statistics Canada, the population of Canada, its businesses and governments. Accurate and timely statistical information could not be produced without their continued cooperation and goodwill.

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Preface

Through time, the Census of Canada has become the primary source of information about Canadians and how they live. Decisions based on this information affect the social and economic affairs of all Canadians.

Statistics Canada, as the professional agency in charge of producing this information, has the responsibility for informing users of data quality. The agency must describe the concepts and methodology used in collecting and processing the data, as well as any other features that may affect their use or interpretation.

In order to describe the quality of the 1991 Census data, Statistics Canada has prepared the following publications: a census **Dictionary**, which provides concise and easy to understand textual and graphical information pertaining to census concepts; a **Handbook**, which provides an overview of how the census is conducted; and a series of **Technical Reports**, which present in greater detail, information on the quality of data for specific characteristics, such as family, as covered in this report.

Information on data quality is important for users. It allows them to assess the usefulness of census data for their purposes as well as the risks involved in basing conclusions or decisions on these data. The 1991 Census was a large and complex undertaking and, while considerable effort was taken to ensure high standards throughout all collection and processing operations, the resulting data are inevitably subject to a certain degree of error.

Information on data quality is also important to Statistics Canada. It is an integral part in the development and maintenance of pertinent and reliable statistical programs.

This publication is a major contribution to achieving these goals. It has been prepared by Pierre Parent, with the support of staff from three Divisions in Statistics Canada: Housing, Family and Social Statistics, Census Operations and Social Survey Methods.

Finally, I would like to express my appreciation to the millions of Canadians who completed their questionnaires on June 4, 1991, as well as to those who assisted Statistics Canada in planning and conducting the census.

Ivan P. Fellegi

Chief Statistician of Canada

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I. Introduction

Every five years a census of population is carried out in Canada. The national Census of Population is a major project conducted by Statistics Canada to collect, verify and publish data. The national Census provides the most comprehensive database on the characteristics of Canadians, their families and their households. The information ranges from age and sex of individuals to their ethnic origin, education, occupation, labour force activity, industry, sources of income, their family and household characteristics. The census is an invaluable source of information that is useful to the various levels of government, to businesses, associations, educational institutions, interest groups, and to the general public. The data can be used in government planning of social and economic programs, assessment of the need for educational and health facilities, and planning by private enterprise.

Information is obtained through a series of questions established after detailed consultation and testing. It is collected by trained enumerators, checked for inconsistencies and errors and then captured. The final results are placed on a computer database at Statistics Canada. Data are analyzed, published and disseminated in various forms.

In a massive project such as the census, however, the results are never perfect. Although considerable effort has been made to maintain high standards of quality, errors inevitably occur at various stages of the collection and processing operations. Users must be aware of the nature and scope of any errors that the census data may contain, as well as the risks involved in basing conclusions or decisions on these data.

The **1991 Census Technical Reports** have been designed to inform data users of the potential problems or intricacies of the data. The reports inform users of the conceptual framework and definitions used in the data collection, any unusual circumstances which may influence the data, likely principal sources of error and, where possible, the size of the error.

This product is a specialized analytical tool. It complements and co-ordinates other reference products and assists the more sophisticated user to understand variable details and methodological information on coverage, sampling and weighting.

II. Concepts and Definitions

The definitions of census terms, variables and concepts are presented here as they appear in the **1991 Census Dictionary** (Catalogue No. 92-301E). Users should refer to the 1991 Census Dictionary for full definitions and additional remarks related to any concepts and definitions not found in this chapter.

Census Variables

While the 1991 Census questionnaire consisted of fifty-three (53) questions, the **1991 Census Dictionary** (Catalogue No. 92-301E or D) lists well over 200 variables. Obviously, there is not a one-to-one correspondence between questions and variables. Several variables can be produced from one question only, while other variables are derived using responses from several questions.

By the same token, some census variables closely resemble information as it was gathered on the questionnaires while others are very different. For example, sex has two answer categories, male and female: the categories on the questionnaire correspond exactly to those on the database. Sex is therefore called a **direct** variable.

Derived variables have undergone transformations. For example "date of birth" was asked on the questionnaire but age is the database variable. Sometimes the link between collected information and the database variable is not so straightforward. For example, several questions are used to identify the unemployed, yet the word "unemployed" does not appear anywhere on the questionnaire, and its definition is not intuitively obvious.

Census variables are grouped into these categories:

- counts and demographic data;
- ethnic origin and immigration data;
- language;
- aboriginal status;
- schooling;
- religion;
- labour force;
- income;
- families;
- dwellings and households;
- institutions and other collectives;
- disability.

The potential for creating new census variables is virtually limitless. Some variables can be very conventional and **direct**, while other variables can be **derived** and tailored to user needs. In the Family category, all variables are **derived** variables; some are given below, with a short description from the **1991 Census Dictionary**.

Census Family Composition

Refers to the classification of census families according to the number and/or age groups of never-married sons and/or daughters at home.

Census Family Household Composition

Refers to the classification of census families according to the presence and number of "**additional persons**" in the household. **Additional persons** refers to any household member who is not a member of the census family being considered. These additional persons may be either members of another census family or non-family persons.

Census Family

Refers to a now-married couple (with or without never-married sons and/or daughters of either or both spouses), a couple living common-law (again with or without never-married sons and/or daughters of either or both partners), or a lone parent of any marital status, with at least one never-married son or daughter living in the same dwelling.

Economic Family

Refers to a group of two or more persons who live in the same dwelling and are related to each other by blood, marriage, common-law or adoption.

Census Family Type

Refers to the classification of census families according to whether or not any family member is responsible for the household payments, i.e. rent, or mortgage, or taxes, or electricity.

Income: Census Family Total Income

The total income of a census family is the sum of the total incomes of all members of that family.

Census Family Status

Refers to the classification of the population according to whether or not they are members of a census family.

Family persons refers to household members who belong to a census family. They, in turn, are further classified as follows:

Husband and wife refer to persons of opposite sex who are legally married to each other and living in the same dwelling.

Common-law partners are two persons of opposite sex who are not legally married to each other but live together as husband and wife in the same dwelling.

Lone parent refers to a mother or a father, with no spouse or common-law partner present, living in a dwelling with one or more never-married sons and/or daughters.

Never-married sons and/or daughters refers to blood, step or adopted sons and daughters who have never married (regardless of age) and are living in the same dwelling as their parent(s). Sons and daughters who are currently or were previously married, or who are living common-law, are not considered to be members of their parent(s)' census family even if they are living in the same dwelling. In addition, those never-married sons and daughters who do not live in the same dwelling as their parent(s) are not considered members of their parent(s)' census family.

Non-family persons refers to household members who do not belong to a census family. They may be **related** to Person 1 (the household reference person)(e.g., Person 1's divorced brother, brother-in-law, cousin, grandparent) or **unrelated** (e.g., lodger, room-mate, employee). A person living alone is always a non-family person.

Census Family Living Arrangements

Refers to the classification of persons in terms of whether they are **members of a family household or a non-family household**, and whether they are **family or non-family persons**.

Census Family Structure

Refers to the classification of census families into **families of now-married couples** (with or without never-married sons or daughters of either or both spouses), **families of common-law couples** (with or without never-married sons or daughters of either or both partners), and **lone-parent families** by sex of parent.

Universes

A "universe" in the census refers to what is counted in a tabulation. The possibilities are:

- population (i.e. persons);
- families;
- households;
- dwellings.

The **Population Universe** includes variables that provide information about individuals. It covers a wide variety of characteristics such as demographic, ethno-cultural, language, mobility, schooling, income and labour force. A

complete list of these variables can be found in the Table of Contents of the **1991 Census Dictionary** (Catalogue No. 92-301E). Some variables within this universe are collected for the entire population of Canada; others are collected for a sample of the population only.

The primary objective of the census is to provide accurate coverage of the entire population of Canada at various geographic levels. The 1991 Census provided counts for:

- all Canadian citizens and landed immigrants with a residence in Canada;
- Canadian citizens and landed immigrants who are abroad, either on a military base or attached to a diplomatic mission;
- Canadian citizens and landed immigrants at sea or in port aboard merchant vessels under Canadian registry;
- non-permanent residents (persons who hold student or employee authorizations, Minister's permits or who are refugee claimants).

"Families" are groups within a household. Within the Family Universe two general categories are identified: **census families** and **economic families**.

The **Household Universe** is composed of subuniverses and variables which pertain to a person or a group of persons (other than temporary or foreign residents) who occupy a dwelling. Examples of household universes are private households, collective households, households outside Canada.

The **Dwelling Universe** is composed of subuniverses (collective and private) and variables pertaining to characteristics of dwellings in Canada in that dwellings are distinct from households in that dwelling characteristics refer to physical attributes of a set of living quarters, whereas household characteristics pertain to the person or group of persons (other than foreign and/or temporary residents) who occupy a dwelling.

Census Geography

Statistics Canada uses a very accurate and detailed geographic structure that makes it possible to obtain information for many different geographical units, known as geographic areas. Data from the 1991 Census is available for numerous standard geographic areas, as well as non-standard or user-defined areas.

Census Boundaries

In order to take a census for a country as large as Canada, smaller geographic boundaries must be established to facilitate enumeration. The basic boundaries are the provinces (PROVs), the federal electoral districts (FEDs) and, finally, a smaller unit called the enumeration area (EA).

Standard Geographic Areas

Census data are disseminated for a number of standard geographic areas. These areas are of two (2) types: legislative/administrative and statistical.

- (a) Legislative/administrative areas are defined, with a few exceptions, by Canadian federal and provincial statutes. These include:

Geographic Area	Total Number
• Provinces and Territories;	12
• Federal Electoral Districts (FEDs);	295
• Census Divisions (CDs);	290
• Census Subdivisions (CSDs);	6,006
• Subprovincial Regions (SPRs).	68

- (b) Statistical areas are defined by Statistics Canada as part of the spatial frame used to collect and disseminate census data. These include:

Geographic Area	Total Number
• Agricultural Regions;	76
• Census Consolidated Subdivisions (CCSs);	2,630
• Census Metropolitan Areas (CMAs);	25
• Census Agglomerations (CAs);	115
• Primary Census Metropolitan Areas (PCMAs);	12
• Primary Census Agglomerations (PCAs);	21
• Census Tracts (CTs);	4,068
• Provincial Census Tracts (PCTs);	1,815
• Urban Areas (UAs)/Rural Areas;	893
• CMA/CA Parts	N/A
• CMA/CA Components;	N/A
• Enumeration Areas (EAs).	45,995

Other geographic units of quasi-standard nature are **unincorporated place (UP)**, **township, range and meridian** and **postal code**.

User-defined Areas

Census data can also be produced for areas other than the standard geographic areas, that is for user-defined areas. These are of two (2) types: aggregation of standard geographic areas and custom **query areas**.

An in depth look at terms related to the geography of the 1991 Census is provided in the geography section of the **1991 Census Dictionary**. It describes, more extensively, concepts related to geographic areas and census cartography.

III. Data Collection and Coverage

For the 1991 Census, information was collected from more than 11 million dwellings both in Canada and abroad. The data collection process consists of the drop-off and retrieval of approximately 11,500,000 questionnaires. These questionnaires are then edited to ensure they have been properly completed by Canadians all across the country. This phase employed approximately forty thousand (40,000) people in a variety of tasks from mapping to postcensal activities.

Two **collection methods** were used for the 1991 Census: **self-enumeration** and **canvasser enumeration**. In self-enumeration areas, a questionnaire (Form 2A or Form 2B) was dropped off at each household before Census Day (June 4). A member of the household was to complete the questionnaire on Census Day. Questionnaires were mailed back in pre-addressed envelopes. In 1991, less than 2% of households were enumerated by canvassers: census representatives completed a long form questionnaire (Form 2D) for those households by interview. This method was used to enumerate each household in remote or northern areas and on Indian reserves where irregular mail service makes mail-back impractical. Some of the remote areas were enumerated as early as March, 1991. Data were collected on **every Canadian citizen, landed immigrant and non-permanent resident alive at midnight between June 3 and June 4, 1991**.

The two main types of accepted **enumeration approaches** used by census takers are the “**de jure**” approach and “**de facto**” approach. The “**de jure**” approach assigns the person to the dwelling in which he/she usually resides. The “**de facto**” approach assigns the person to the dwelling in which he/she is staying at the time of enumeration. In Canada the “**modified de jure**” approach is used. People were enumerated at their usual place of residence, regardless of where they were on Census Day, as were all Canadians found in a dwelling on Census Day who did not have a usual place of residence elsewhere in Canada. This approach recognizes, and compensates for the potential failure of a straight “**de jure**” approach to enumerate persons away from their usual place of residence on census night.

In 1991, a number of initiatives were taken to improve coverage. These included:

- Using paid advertising to inform Canadians on when and how “to count themselves in”;
- Creating an address register from other sources of information and using this list to check if any dwellings were missed;
- Establishing special procedures to count homeless people through soup kitchens;
- Establishing special procedures to count the population on Indian reserves;
- Respondent-friendly questionnaire;
- Public Communications Program and a multilingual Telephone Assistance Service.
- Edit and follow-up by CR for non-response and missing information;
- Quality checks of the CRs assigned by the CC and the Quality Control Technician.

The primary components, documents and geographical unit used for data collection and coverage are:

- **Visitation Record (VR) (Form 1)**

A document used by census representatives to list the household numbers and the number of persons per household including temporary residents in all enumeration areas. The VR lists every private and collective dwelling (occupied and unoccupied), as well as every agricultural holding in an enumeration area. The VR also provides control totals to help ensure that all dwellings and persons were enumerated.

- **Census of Population Questionnaires**

Seven (7) questionnaires have been designed for the collection of data. The 1991 Census questionnaires include:

Collective Dwelling Record	(Form 1A);
Short Questionnaire	(Form 2A);
Long Questionnaire	(Form 2B);
Overseas Population Form	(Form 2C);
Long Canvasser Questionnaire	(Form 2D);
Individual Census Questionnaire	(Form 3);
Soup Kitchen Questionnaire	(Form 3B).

- **Enumeration Area (EA)**

An EA is an area canvassed by a Census Representative. It is the smallest geographical unit for which census data are available. The number of dwellings vary from 375 (maximum) in large urban areas to 125 (minimum) in rural areas.

Please refer to the **long questionnaire (Form 2B)** for questions asked in the 1991 Census of Canada.

Address Register (AR)

In 1991, to help increase coverage, an address register (AR) was implemented in urban areas with populations of fifty thousand (50,000) and over. The Address Register is a list compiled by merging several administrative data files from a variety of sources. The Census Representative was to compare the addresses in the Visitation Record when the questionnaires were delivered with the addresses in the list taken from the Address Register. If an address appearing in the AR did not match any address in the Visitation Record, the Census Representative returned to the sector again to locate the dwelling at the missed address. Conversely, any address entered by the Census Representative that was not in the AR was added to the AR after the census.

Special Coverage Studies

Since one hundred percent (100%) coverage is virtually impossible in such a large survey, a number of checks are performed on the collection of data. These studies measure the extent of coverage errors that occur when dwellings or individuals are missed, incorrectly included, or double-counted. Some examples of these checks are the **Vacancy Check**, **Temporary Residents Study**, **Reverse Record Check**, and the **Overcoverage Study**. These studies will be discussed in more detail in the following chapters on Data Assimilation (Chapter IV) and Data Evaluation (Chapter VI), and in the technical report on coverage (Catalogue No. 92-341).

IV. Data Assimilation

Data assimilation is the processing phase during which data from the Census questionnaires are edited, coded and captured. The process includes the transformation of the questionnaire responses into machine-readable form. The four main components of data assimilation are:

- Regional Office Processing
- Direct Data Entry
- Head Office Processing
- Automated Coding

Regional Office Processing (ROP)

At this stage, ROP staff will ensure that information appearing on the questionnaires is suitable for key entry into the computer. This operation employs approximately 2,000 people, and is conducted in Revenue Canada - Taxation (RCT) regional processing centres in St. John's, Jonquière, Shawinigan, Sudbury, Winnipeg and Surrey. In Ottawa it is conducted in the Statistics Canada head office. For the 1991 Census, the operation took place during the period between July and November of 1991.

ROP operations consisted of the following:

(a) Receipt and document preparation

When completed questionnaires reached the Regional Processing Centres, they were logged, counted and prepared for key entry. Preparation included consistency checks between the questionnaires and the Visitation Record - making sure, for example, that the number of household members on both documents matched. Legibility checks ensured that the documents were suitable for computer entry. Finally, all written answers on household relationships (Question 2) were converted to numerical codes.

(b) Reverse Record Check

A sample of persons was selected from the 1986 Census records and external sources, and 1991 documents were searched for these same persons. If a person was found, 1991 characteristics were noted and sent to head office. For those not found, further tracing determined if they had been enumerated elsewhere in Canada or missed altogether. The results of these searches are coded and captured, and the file is turned over to the Social Survey Methods Division for weighting and production of undercoverage estimates.

(c) Economic Coding

Written responses for some labour market questions on the long census forms were converted into numeric codes suitable for direct data entry. Three tasks were involved:

- editing to determine if the respondent had worked at any time during the period of January 1, 1990 to June 4, 1991;
- converting the industry, occupation and place of work to numeric codes;
- editing the class of worker question.

Supervisors and coding consultants resolved any discrepancies in coding before the questionnaires for an enumeration area (EA) proceeded to the next stage. Sometimes other sources, city directories and subject-matter personnel for example, were consulted.

(d) Processing

Questionnaires were transferred in work units for direct data entry at Revenue Canada - Taxation regional processing centres: from there, after keying, they were sent to Statistics Canada in Ottawa.

Direct Data Entry (DDE)

The data entry activity was completed on behalf of Statistics Canada by Revenue Canada - Taxation (RCT). Questionnaire data was key entered at seven (7) RCT regional centres, transmitted to RCT Headquarters in Ottawa and stored on tape cartridges. This operation employed approximately 1,500 people sworn to secrecy under the *Statistics Act*.

Head Office Processing (HOP)

Head Office Processing is a combination of automated and manual processing designed to carry out structural edits on the census data and to process special enumeration returns. Included are returns for Canadians overseas, temporary residents and personnel aboard merchant, naval and coast-guard vessels. HOP also processes coverage study returns such as **Reverse Record Check (RRC)**, **Vacancy Check (VC)**, and **Overcoverage Study (OC)**. In addition, HOP is responsible for the preliminary and final population and dwelling counts and for the microfilming of census questionnaires for archival purposes. This operation employs approximately 150 people and is conducted in the Statistics Canada head office in Ottawa.

Head Office Processing consisted of four (4) major activities performed in three (3) phases:

- **DA I - Receipt, Registration and Storage**

Visitation Records and questionnaires for each enumeration area were received, registered and stored at the head office. Tapes containing respondent data were copied and loaded onto the HOP database.

- **DA II - Data Analysis**

Automated structural edits were carried out at the enumeration area, household and person levels, and inconsistencies, such as person count conflicts and household number conflicts were resolved manually.

- **DA III - Special Processing**

Special enumeration returns from Canadians living outside Canada, temporary residents and persons aboard merchant, naval and coast-guard vessels were adjusted to include them. In addition, coverage study returns for checking vacant dwellings, under- and overcoverage were processed, and adjustments were done to the data based on the results of the vacancy check.

- **DA I and/or DA II**

HOP was also responsible for the preliminary and final population and dwelling counts and for the microfilming of census questionnaires for archival purposes.

Automated Coding (AC)

The automated coding operation converted written responses to questions on mother tongue, home language, knowledge of other languages, registered Indian status, place of birth, ethnic origin, major field of study, religion and place of residence 1 year ago and 5 years ago to numeric codes.

The responses were matched against an automated reference file/classification structure containing a series of words or phrases to obtain corresponding numeric codes. An analysis was conducted for each variable to ensure data quality objectives were maintained prior to transferring the records to edit and imputation.

V. Edit and Imputation

In the edit and imputation phase, all remaining errors, discrepancies, inconsistencies and missing answers are identified and corrected (including imputation) by a fully automated series of computer programs. The final set of usable "clean" data (free of invalid, inconsistent and missing responses) is produced, comprising a unique database which provides Canada's most detailed information about the population and its characteristics, ranging from the national to the neighbourhood level.

Errors found at this stage can be the result of respondents answering the questions incorrectly or incompletely, or they can be due to errors generated during coding activities and data capture. After errors are detected, values for missing or incomplete entries are imputed. Imputation, which is the correction of the errors, is done using either a "deterministic" or a "hot deck" method. For deterministic imputation, errors are corrected by inferring the appropriate value from answers to other questions. The "hot deck" approach selects a record that has a number of characteristics in common with the record in error, and imputes the missing information from this "donor" record. The relationship to reference person (or Person 1), age, sex and marital status variables are imputed using the latter approach. This is done by matching using a consistent record, bearing in mind certain geographic and other constraints.

Two (2) automated systems are used for editing and imputing census data:

- **CANEDIT**

This system is used to correct the 100% demographic data for age, sex, relationship to Person 1 and marital status, and the labour data from the 20% sample (Form 2B). Thus this is the system used for families.

- **SPIDER (System for Processing Instructions from Directly Entered Requirements)**

The SPIDER system was developed for the 1981 Census to handle the more complex coded variables and absolute values such as income. Most of responses to the questions asked of 20% of the population are processed using SPIDER.

Weighting

One in every five households or 20% of the population receives a more detailed long questionnaire (Form 2B) and is asked additional socio-economic questions. A weighting algorithm is developed so that these data can be used to estimate response from 100% of the population. The procedure to weight sample data in 1991 has been revised from the 1986 and is known as the "Generalized Least Squares Estimation Procedure (GLSEP)". The GLSEP begins with initial weights of approximately 5 and then, using basic census information known for every person, i.e. age, sex and marital status, adjusts them to obtain the desired agreement between the sample estimates and the population counts. Once data are finalized and weights are calculated, final data are transferred to the Canada Retrieval Databases; these databases are used to produce the published and custom products.

1. Operations Done on the Family Relationship

Before the data are edited, and if necessary imputed, certain operations from the "DERIVE" program concerning family relationship and affecting the marital status and common-law status variables are carried out.

The purpose of the "DERIVE" program operations is to designate the reference person properly and correctly identify the family relationship between the members of the household and the reference person. Where there are conflicts with questions on the form, such as age, sex, marital status and common-law status, changes are made to make the relationships between family members consistent.

The impact of changes made through these operations on the marital status and common-law variables is shown in Table 5.1.

This table shows that these operations have a minimal effect on the data for marital status. Only 0.3% of the marital status data were modified (Table 5.1). Also, these changes mainly affect the data on never-married and married persons.

Table 5.1 Percentage of data changed as a result of the "DERIVE" operation, Canada and regions, 1991

Variable	Canada	East	Quebec	Ontario	West	Outside Canada
	(%)					
Marital status	0.3	0.3	0.4	0.3	0.3	0.6
Common law	8.0	6.1	9.0	8.3	7.3	7.7

In 1986, the "DERIVE" operation had a greater effect on the marital status data because people living common-law were included in the "Now married (excluding separated)" category. In 1991 the DERIVE operation was modified somewhat. Persons living common-law were not redefined in this manner. In the 1991 Census, persons living common-law were to indicate their legal marital status, so the DERIVE operation served simply to ensure consistency between the responses for family relationship and marital status. For example, when one of the partners could not be identified among the members of the household, the DERIVE operation checked that the answer to the common-law question was not contradictory. That is why the changes to the data on persons living common-law are large - about 8%. The effect of the changes is slightly higher in Quebec, where 9% of the data were modified.

2. Edit and Imputation Software

The CANEDIT system first edits, then imputes the data for relationship to the reference person, age, sex, marital status and common-law. The editing takes the form of conflict rules: there is a conflict, for example, if a respondent's marital status is "legally married (and not separated)" and the person is under age 15. This is resolved using "hot deck" or donor record imputing, to make sure that the correlation of characteristics is preserved and that minimal change is achieved. For example, if a record indicates that a person is a married woman but her age is not reported, CANEDIT finds the minimum change necessary to correct the error that does not contradict the other information reported. The system does not impute an age under 15, since that would make the marital status incorrect. It scans the "clean" records to find a married woman from the same region whose other relevant characteristics are the same, and uses the age of that person to replace the missing age figure.

3. Edit and Imputation of Responses

The 1991 Census editing rules were quite similar to those for the previous census. There were 20 edit rules, covering both aspects related to the respondent and aspects that compared the responses of two different members of the household. The complete list of edit rules for relationship, age, sex and marital status is given in Appendix A, but it seems appropriate to present some examples here to illustrate the general principles and some characteristics of the edit and imputation methods.

One basic edit and imputation rule is automatic rejection of any questionnaire containing blank entries. The questionnaire in Example 1 was rejected in edit because the question on the son's birth decade and year was left blank. To impute the missing value, the system searches the processed files to find a household with characteristics similar to the one in the example, to be used as a reference file. The missing data - birth decade and year for Person 3 - are then extracted from that record.

In general, the matching of similar characteristics is done using two groups of specifications: stratification and auxiliary constraints. The first provides that the records processed are those for similar households, which for example live in the same region (rural or urban), have the same number of members, and so on. Auxiliary constraints provide, for example, the matching of data in the record relating to sex, relationship to Person 1, date of birth or marital status, depending on the variable to be imputed.

Example 1				
Person	Relationship to Person 1	Year of birth	Sex	Marital Status
1	-	1965	M	Legally married (and not separated)
2	Wife	1967	F	Legally married (and not separated)
3	Son	No response	M	Never married (single)
4	Daughter	1990	F	Never married (single)

Example 1 should contain a household consisting of four people, with the third registered as the son. To be a reference file, the file for this household must contain the same information as the household in Example 1 - the same relationship to Person 1, the same sex and the same marital status. The birth decade and year of the son in the reference file are then assigned to the son in Example 1.

Only files that are accepted at edit can be used as reference files, so the data imputed must necessarily be error-free (all responses must be valid and consistent).

In Example 2, the birth date of Person 3 or his relationship to Person 1 were probably coded or captured incorrectly. According to the census edit rules, a son's or daughter's birth decade must be at least 15 years later than that of at least one parent. The household questionnaire in Example 2 would thus be rejected in edit.

To make the household data in Example 2 consistent, one of the following items of information could have been changed in edit and imputation: the son's birth decade, which conflicts with that of the first two persons, or Person 3's relationship to Person 1. These two options are equivalent, since either one requires only one change. Each of the two solutions will be chosen alternatively. However, once the choice is made, the imputation process is similar to that described for Example 1.

Example 2				
Person	Relationship to Person 1	Year of birth	Sex	Marital Status
1	-	1965	M	Legally married (and not separated)
2	Wife	1967	F	Legally married (and not separated)
3	Son	1970	M	Never married (single)
4	Daughter	1990	F	Never married (single)

Overall, for the data on relationship to the reference person, age, sex and marital status, the effect of the process of imputing missing, invalid or inconsistent data is relatively small. Nearly 98% of the data were not changed at all. The number of cases of inconsistency in which relationship to the reference person, sex, birth decade, year and month, or marital status had to be corrected is a very small proportion of the cases noted at edit. More than 90% of the values imputed were initially missing values. However, for marital status, the previous DERIVE operation helped to reduce the number of inconsistencies and eliminate them for common-law couples.

Table 5.2 Percentage of data modified because of non-response, invalid responses or inconsistencies, Canada and regions, 1991

Question	Canada	East	Quebec	Ontario	West
			(%)		
Relationship to the reference person	2.2	1.5	2.2	2.5	1.9
Date of birth	1.9	1.2	2.0	2.2	1.6
Sex	1.9	1.1	1.9	2.4	1.6
Marital status	2.3	1.4	2.4	2.6	1.9

The figures from Table 5.2 are taken from the final report of the clustered non-response study, except for the question on the relationship to the reference person. For that question, the values in this table were adjusted to reflect the data for the reference person. The table shows that the correction rate for non-response, invalid responses and inconsistencies is low - close to 2% for all variables. It is slightly higher in Ontario and Quebec, and lower in the Atlantic provinces. Note also that the clustered non-response study did not provide figures for households outside Canada. The correction rates are generally higher for those households - up to 4%. The number of households outside Canada is, however, very small. Also, the family data for households outside Canada are not published, although they are kept in the database.

These results show that the quality of the data is not significantly affected by the edit and imputation process, and therefore it has little influence on the distribution of the population by age, sex and marital status, or by family composition.

VI. Data Evaluation

Throughout the census-taking process, care was taken to ensure high quality results. Rigorous quality standards were set for data collection and processing, and the Public Communications Program assisted in minimizing non-response. A Data Quality Measurement Program was established to provide users with information on the quality and limitations of census data.

Although considerable effort is made throughout the entire process to ensure high standards of data quality, resultant data are subject to a certain degree of inaccuracy. To assess the usefulness of census data for their purposes and to understand the risk involved in drawing conclusions or making decisions based on these data, users should be aware of their inaccuracies and appreciate their origin and composition.

Error can arise at virtually any stage of the census process from preparation of materials to data collection and through the various processing stages. Some errors occur at random and tend to cancel each other out when individual responses are aggregated for a large group. For errors of this nature, the larger the group the more accurate the corresponding estimate and therefore it is important to be cautious when dealing with estimates derived using small aggregated groups of responses. On the other hand, some errors which occur more systematically are more serious to data users than random errors.

For census data in general, the principal types of errors are as follows:

- **Coverage Errors**
Occur when individuals and/or dwellings are missed, incorrectly included, or double counted;
- **Non-response Errors**
Occur when responses are not available from some households and/or individuals due to extended absence or for other related reasons;
- **Response Errors**
Occur when respondents, or in some instances census representatives, misinterpret a census question and record an incorrect response;
- **Processing Errors**
Can occur during **coding**, when write-in responses are transformed into numerical codes by clerks, **data capture**, when responses are transferred from questionnaires to computer tapes by key entry operators, and **imputation**, when a valid, but not necessarily correct, response is inserted by the computer into a record to replace missing or invalid data;
- **Sampling Errors**
Only apply to supplementary questions on the long (2B) questionnaire, asked of only twenty percent (20%) of the households in the sample. These errors arise due to the fact that they are weighted to represent the whole population and inevitably differ somewhat from results that would have been obtained had the questions been asked of the total population.

All of the above errors have both random and systematic components. Usually the systematic component of sampling errors is very small in relation to its random component. For other non-sampling errors, both random and systematic components may be significant.

Four (4) studies are undertaken to measure coverage errors:

- Vacancy Check
- Temporary Residents Study
- Reverse Record Check
- Overcoverage Study

Two (2) studies are conducted to evaluate response errors:

- Reverse Record Check Content Study
- Overcoverage Content Study

Four (4) studies are undertaken to evaluate the effect of sampling errors on the sample data:

- Sampling Bias Study
- Weighting Evaluation
- 2A/2B Consistency Study
- Sampling Variance Study

Two further studies are done to evaluate the data:

- Edit Sample Study
- Clustered Non-response Study

Besides these studies, before the data are approved for dissemination, the Certification task is performed to detect any anomalies not identified during the other stages. This process involves analysing the evolution of trends for the variables to be published.

On some Indian reserves and settlements (total of 78), enumeration was not permitted, was interrupted before completion or produced poor quality data. These areas are called **Incompletely Enumerated Indian Reserves and Indian Settlements**. Under these circumstances, data are not available for these areas, are not included in tabulations, and are noted accordingly where applicable. Caution should be exercised when analyzing data from areas affected by incomplete enumeration, especially in small areas where the impact is the greatest.

The inclusion of **non-permanent residents** in the 1991 Census will affect the variables that were collected on a one hundred percent (100% data) basis such as age, sex, mother tongue, and marital status. Census data on immigration will have to be examined carefully to determine the extent of the variations caused by enumerating non-permanent residents.

If a problem is encountered in one of the studies mentioned above, various steps can be taken, from creating an explanatory cross-reference or caution concerning the use of the data to cancelling the dissemination of the data in cases of very serious problems. Also, some studies are used to correct known problems. For example, the final population data take into account the results of the study on temporary residents, in which an estimate is made of the number of temporary residents who were not counted at their usual place of residence.

The studies sometimes take quite a long time, so some problems cannot be identified or quantified before the data are published. This chapter in the technical report gives some results of these studies and for the certification process, and reports on problems encountered at any other stage in the census.

There were few problems relating to families. The most important points are the following:

One of the main sources of error in the census is net undercoverage. In 1991, it was approximately 2.87% for the population and 2.21% for households. No precise estimate has yet been made for families, but the rate could be lower than that for households, since the rate of undercoverage for married persons is much lower than that for persons with other marital statuses, and since the rate is higher for one-person households.

Non-response to the various census questions is also a cause of flaws in the data. However, this effect was very small in 1991. For the questions used to derive family data, it is 1.5% for relationship to Person 1, 1.6% for age, 1.7% for sex, 2.1% for marital status and 5.1% for common-law. Of these non-responses, 1.2% were non-response to all of questions 1 to 6 and the question on mother tongue, that is to all the questions on the short questionnaire.

Certification revealed a major (35%) increase in the proportion of secondary families - families with no primary maintainers. Analysis of this task did not make it possible to determine whether this growth was real, but a postcertification study was planned to determine whether there actually was an increase, or whether this is a problem with the data.

A project was conducted to relate various edit and imputation processes; it found response errors for the question on sex. Although there were relatively few of these errors, they may have caused a slight overestimation of the number of male lone-parent families.

Since 1981, the number of response categories for the question on the relationship to Person 1 has been reduced. Some of these relationships affected family relationships, such as lodger's wife or husband. The effect of such a change cannot be precisely quantified, but it appears that a number of families were lost in this way.

The data on families in Hutterite colonies are historically affected by a degree of uncertainty. The size of these households, and the few details in the possible response categories, often make it difficult to code these families.

Despite the cautions given above, cautions which the users should remember, the quality of the family data is considered very good.

VII. Historical Comparability

To fully utilize census data we must analyse not only the historical trends of the data we are presenting, but also the historical changes relating to the type of data required and to the collection procedures. In the past, the Census of Canada has undergone many changes in order to meet the ever-changing needs of Canadians for timely and accurate information on Canada's statistical profile. This versatile perspective has endured in 1991.

The census questionnaire was completely redesigned for the 1991 Census. The following changes were made since the 1986 Census:

- Twelve (12) questions not asked on the 1986 Census questionnaire appeared on the 1991 Census questionnaire;
- Of the twelve (12) questions, seven (7) appeared for the first time and five (5) were reinstated from previous censuses;
- Four (4) questions found on the 1986 Census questionnaire were excluded from the 1991 Questionnaire;
- Two (2) new census questionnaires were added in 1991 (Form 2D - Canvasser Questionnaire and Form 3B - Soup Kitchen Questionnaire).

Form 2D was introduced to enumerate remote northern areas and Indian reserves. It contained the same questions as the Form 2B but was set up to be administered in a person to person environment. Form 3B, an experimental pilot questionnaire, consisted of eleven (11) questions. Interviews were conducted on a person to person basis in a sample of soup kitchens in major Canadian cities. This special enumeration procedure resulted in better coverage in major cities.

For the 1991 Census, Statistics Canada implemented a Canada wide Address Register to improve coverage in urban centres with a population of fifty thousand (50,000) and over. It is estimated that the coverage increased by over sixty-eight thousand (68,000) people. Please refer to Chapter III on Collection and Coverage for additional information on the Address Register.

For the first time since 1941, both **permanent and non-permanent residents** of Canada were enumerated. A growing segment of Canada's population, non-permanent residents can create a demand for government services such as schooling, language training, health care, and employment programs. Users should be careful when comparing data from 1991 and previous censuses.

Publicity and advertising for the 1991 Census were viewed in a slightly different light. The Sponsorship Program continued to enlist the voluntary support of corporations, associations and government as in 1986 and previous censuses, but to complement this program, Statistics Canada implemented a paid publicity campaign aimed at increasing public awareness of the importance of census data and encouraging Canadians to respond accurately to their census questionnaire in a timely fashion. For the 1991 Census, teachers' kits have been introduced to help promote a greater awareness of the availability and uses of the census data produced by Statistics Canada.

Besides the importance of having the same questions from one census to another, changes to the concepts, to the formulation of the questions or to the instructions to the respondents for these questions are another possible cause of lack of comparability of the data over time. For the family data, the basic questions have always been in the last censuses, and the comparability problems result mainly from changes to certain concepts or instructions. Since these changes are few and minor, the data for the various variables relating to families (structure, type, composition, family status, for example) in the 1991 Census are generally comparable with those from previous censuses. However, some caution is necessary, as indicated below.

Census Families

The definition of the **census family** has remained much the same since 1951. Thus although since 1981 there has been a distinction between common-law couples and married couples, and this was not the case before, the husband-wife family category, which combines the two, makes it possible to compare later data with the data from before 1981.

On the other hand, the data published on families since the 1976 Census are somewhat different from the data published before that date. Before 1976, the published statistics came from four types of households: 1. occupied private households; 2. collective households of Hutterite colonies; 3. other types of collective households; and 4.

households outside Canada. Beginning in 1976, only the data on private households were published. The data on Hutterite colonies and households outside Canada are kept in the database but not published, and the other collective households category has not been available since that date. There is thus a slight difference between the family data for 1976, 1981, 1986 and 1991 and the family data for previous years. However, this difference is minimal, since there are only about 10,000 households outside Canada and 10,000 collective households, or approximately 0.1% of the total number of households.

1. Census Family Structure

Since 1951, families have been classified according to whether they consist of a couple (husband-wife families) or only one parent (lone-parent families). However, until 1981, it was not possible to distinguish married couples from common-law couples, and the instructions for including the latter varied considerably from 1971 to 1991.

In the 1971 and 1976 Censuses, common-law relationships were implicitly recognized, although there was nothing in the questionnaire or in the Guide explicitly asking that such unions be indicated. The only mention of the term "common-law" was in the instruction on marital status in the guide accompanying the questionnaire: it asked that persons living common-law indicate "married" as their marital status. The subject of common-law relationships was not discussed in connection with any question, but the instruction for the "Partner" category for the question on relationship to the head of the household was ambiguous and could lead to error¹.

Also, in the 1976 Census, even though respondents were not specifically asked to indicate common-law relationships, some 73,000 respondents did write in answers that indicated or suggested that their relationship was common-law. Examples of such answers are "Common-law spouse", "Fiancé(e)", "Future spouse", or "Companion". Although these responses to the question on relationship to the head of the household could all have been considered to indicate common-law relationships, they were not recorded as such in the final database, but were recoded to show what was considered an appropriate relationship. For example, if the answer written in was "Common-law spouse of head of household", the new response assigned was "Spouse of head of household".

Beginning with the 1981 Census, the question on the relationship to Person 1 included the category "Common-law partner". Respondents were also encouraged to indicate less direct relationships like "Common-law partner of son or daughter" in the answer box for this purpose for persons 3 to 6. For 1981, the data on common-law unions were not presented separately in the publications, but were grouped with the data for husband-wife families (however, the 1981 data on common-law relationships can be found in the 1981 database and in some 1986 publications).

In 1991, in addition to the question on the relationship to Person 1, there was a direct question on common-law relationships. However, the corresponding changes to the processing of the information ensured the comparability of the 1991 family data with that of 1981 and 1986. It is of course possible that adding this question encouraged some respondents to indicate a common-law relationship more clearly.

2. Census Family Type

Under this variable in the census are found the data on families depending on whether they are maintaining their own households. Here also, changes made to certain concepts since 1951 may have some effect on comparability of the family type data.

Up to and including 1976, the primary family was considered to be the one containing the head of the household. The criterion for choosing the head was changed slightly between 1971 and 1976, but the change had very little effect on this variable.

¹ According to the guide accompanying the questionnaire for the 1971 and 1976 Censuses, the respondent was "to indicate as a partner a person who was not related to the head of the household, had equal access to the dwelling facilities and/or shared the responsibility for maintaining the household (for example, a room-mate)."

In 1981, the concept of head of household was replaced with the reference person, or Person 1, but the selection criteria were not changed significantly. However, the classification into families maintaining their own households (primary families) and families not maintaining their own households (secondary families) was no longer done on the basis of Person 1, but on the basis of a new specific question on the household maintainer. Respondents were asked to enter the name of the person (or one of the persons) living in the dwelling who was responsible for paying the rent, the mortgage, the taxes, or the electricity bill, and so on, for the dwelling. The family in which the person responsible for making the household payments was then considered the primary family. This change may have caused differences between the 1981 and 1976 data, for example. Thus the person entered first on the 1976 questionnaire was automatically considered the head of the household, and if that person was a husband, that person's family was a primary family. However, in 1981, that situation would have given a different result if the person responsible for the household payments was not part of Person 1's family or if there was no one in the household responsible for the payments.

In 1991, the question on household payments was changed again so that more than one person could be entered. That change resulted in the following classification of families: primary maintaining families, other maintaining families, or non-maintaining families. This still did not compromise comparability, since the first category is equivalent to the primary family category for 1981 and 1986, and the other two together correspond to the secondary families for those years.

It is difficult to assess all the effects of these changes on comparability of the data over time. The most important factor is probably the introduction of the question on the person responsible for the household payments, but it probably had only a very limited effect. In the latest censuses, it was found that for about 98% or 99% of households, the person responsible for the household payments was Person 1, Person 1's spouse or one of the never-married sons or daughters. Also, the way respondents followed the instructions on the order of entering persons on the questionnaire - and therefore the selection of Person 1 or the head of the household - over the various censuses may also have had an effect in this area (Appendix B contains the instructions for selecting Person 1 or the head of the household for the 1971 to 1991 Censuses).

3. Census Family Status

Since the definition and criteria used to determine the status of individuals in the census family remained the same (adding the common-law category did not affect comparability in this respect), the data on spouses and lone parents collected over the 1951-1991 period are comparable. As for never-married sons and daughters living at home (before 1991, the term "children" was used to identify them), the data from previous censuses are not always fully comparable. There are two factors involved: the actual relationship to Person 1 or the head of the household, and the age of the children.

In the first case, before the 1976 Census, guardianship children (like grandchildren, nephews and nieces of the head of the family) and wards under age 21 for whom no guardianship pay had been paid were considered as children of the head of the family. Since that date, grandchildren, nephews and nieces have been classified according to their actual relationship to the reference person in the household, and they are considered non-census family persons in the publications if neither of the parents is in the household. Children in foster homes and wards are considered lodgers and also counted as non-census family persons in the publications.

Concerning the age of the children, never-married sons and daughters living at home, regardless of their age, were considered members of the census family over the entire period from 1951 to 1991. However, never-married children 25 years old and over were not included as children in most of the **published tables** for the 1951 to 1966 period. Only a few tables including children aged 25 and over are available for those years. Thus great caution is advised when using these data, and it is strongly recommended that the explanatory notes be consulted to find out which tables these are.

Economic Families

Since the 1971 Census, some data have been published on economic families. These data, for example, economic family status, are comparable over time. For this latter variable, the "Non-economic family persons" category was called "Unattached individuals" before 1991. No information on economic families was formally published before 1971.

VIII. Products and Services

Consultation on user needs

Greater emphasis was placed on user consultation for the 1991 Census products and services. Over the course of two years, over 3,000 organizations from private and public sectors were approached to solicit their comments for the proposed product and service line.

The primary objective of the project was to consult with current and potential census data users to evaluate the proposed 1991 product and service line. Client feedback obtained in this way was used to assist census personnel in assessing and determining product features, content, prices, etc.

Consultations varied considerably in format and in terms of numbers and client sectors consulted. For example, some smaller consultations, restricted to Regional Reference Centres and Provincial Focal Points tended to be preliminary investigations of newly-developed product types. At the other end of the scale, the Dimensions Series was the subject of a mail survey to 2,500 current and potential users, as well as cross-country focus group discussions. Another mail survey to more than 200 libraries yielded an 80% response rate and provided valuable insights into concerns librarians had with regard to census products. Most other products were presented for consultation to several dozen users from a variety of sectors, either by means of face-to-face interviews or mail-back questionnaires. In many cases, the Regional Reference Centre staff was heavily involved in the organizing of the consultations, conducting the interviews and providing their own feedback.

Between November 1 and November 15, 1990, eight (8) Focus Groups on Census Data Support Information were surveyed for their comments and recommendations regarding the **1991 Census Technical Report Series**. Suggested fundamental changes and improvements to the product helped meet the needs of current and potential users.

Product content determination

While users overwhelmingly endorsed most products and services presented to them, they also provided valuable critiques. Many of the suggestions confirmed the need for changes already planned. In some cases, this feedback provided evidence that there was less demand for a product and therefore no need for its production. Findings from the Task Force on the Census Custom Products Service resulted in a complete restructuring of service to provide better and more timely service. Consultation on the Place of Work variable was carried out to determine the interest in and level of funding available for coding to the submunicipal level.

Consultation proved to be an essential exercise in developing the shape and content of the census product and service line, and determining market potential and pricing. Furthermore, the public relations aspect cannot be underestimated: consultation enabled members of the public to preview census output and provided assurance that their input makes a difference.

Marketing of products and services

The 1991 Census Marketing Program ensures that potential data users receive the information they need on census products and services in order to make informed decision. It seeks to reach those individuals or enterprises that rely on census data to inform them of the products and services available from the census database and their potential uses and applications. The national headquarters in Ottawa and the regional reference centres across the country work in partnership to ensure that the largest number of people possible are aware of what the census database has to offer.

The Census Marketing Program assumes these tasks by:

- planning and co-ordinating census data releases and publication releases;
- developing a client-oriented approach to the promotion of the census database;
- maintaining relations with sponsors who provided support prior to June 4, 1991;
- sustaining relations with purchasers of 1986 Census data and of similar Statistics Canada products and services;
- providing sales support and training workshops to present users and potential new users of census data;
- integrating the products and services generated by the census with many other products and services available from Statistics Canada.

For each data release, the Census Marketing Program, ensures that the information relative to the release is available to the general public through many outlets, especially the media. Communications with other government departments is achieved through letters to deputy ministers indicating release highlights as well as through briefing sessions and special lecture presentations. In addition, **The Daily** is sent to every Member of Parliament and Senator informing each of the results of every data release. For the first time, in conjunction with census data releases, classroom activities will be made available to teachers across the country. This will promote awareness of the availability and uses of census data and other products and services provided by Statistics Canada. Eleven (11) official data releases were made between April 1992 and June 1993.

For 1986 and 1991, the main publications (from The Nation series) concerning census families are the following:

1986

Families: Part 1 (100% data); Catalogue No. 93-106

Families: Part 2 (sample data); Catalogue No. 93-107

Family Income: Census Families; Catalogue No. 93-117

1991

Families: Number, Type and Structure; Catalogue No. 93-312

Families: Social and Economic Characteristics; Catalogue No. 93-320

IX. Conclusion

The purpose of this report was to examine the quality of the 1991 Census data on families. The various aspects which were examined were the concepts and definitions, data collection and assimilation, edit and imputation, data evaluation and historical comparability. The analysis has shown that the 1991 Census family data are, without question, reliable.

The questions from which the family data were derived were asked of the entire population in each of the past few censuses. The non-response rates in 1991 were about 2%, revealing very little difference with those of previous censuses.

For the first time since 1941, the 1991 Census included non-permanent residents in its coverage. Since these persons represented less than 1% of the total population, the distribution of family data should not be affected by including or excluding them on a national level. However, more caution is advisable with data for smaller regions, especially regions where there is a high concentration of non-permanent residents.

Appendix A

1991 Edit Rules and Auxiliary Constraints for Relationship to Person 1, Age, Sex, Marital Status and Common-law Status

The edit rules specify what factors cause a questionnaire to be rejected. If it is rejected, the missing or invalid responses must be imputed. In 1991, rejections for the questions on relationship to Person 1, age, sex, marital status and common-law status occurred in the following cases:

a) Edit rules concerning only one person

A questionnaire was rejected if:

1. One of the relevant variables (sex, birth decade, year or month, marital status) was not indicated.
2. One of the relevant variables (sex, birth decade, year or month, marital status) had an invalid value.
3. A person was indicated as a spouse and was not "Legally married (and not separated)".
4. A person reported as "never married (single)" was also entered as a father, mother, father-in-law, mother-in-law, son-in-law or daughter-in-law.
5. A person whose birth date was later than June 3, 1976 (who was under 15 years of age) also had a relationship to Person 1 which suggested that this person was an adult (for example, a mother-in-law).
6. A person who reported a birth date after June 3, 1976 was also reported as other than "never married (single)".
7. Person 1 reported a birth date after June 3, 1976.
8. A person reported a birth date after June 3, 1991.
9. A person registered as a father or mother (or father-in-law or mother-in-law) reported a birth date after June 3, 1961.
10. A person reported living common-law but with marital status "Legally married (and not separated)".

b) Edit rules involving two persons

A questionnaire was rejected if:

1. The codes indicated that Person 1 and his/her spouse were of the same sex.
2. Two persons were reported as being the father and mother (or father-in-law and mother-in-law) and as being of the same sex.
3. Person 1 reported not being "Legally married (and not separated)" and another person reported being Person 1's spouse.
4. Person 1 reported being "never married (single)" and another person reported being Person 1's single brother-in-law or sister-in-law.
5. Two persons were reported as father and mother (or father-in-law, mother-in-law) and one of those two persons (or both) reported not being married.
6. Person 1 reported being "Never married (single)" and another person reported being a father, mother, father-in-law or mother-in-law.
7. The birth decade reported for a son or daughter, and for a grandson or granddaughter, was the same as that reported by Person 1 or Person 1's spouse.
8. The birth decade reported for a son or daughter was before 188, and that for a grandson or granddaughter was before 189.
9. The birth decade reported for a father or mother was the same as or later than that for Person 1.
10. The birth decade for a father-in-law or mother-in-law was the same as or later than that for Person 1's spouse.

Auxiliary constraints

1. Imputation of a person's sex by matching the birth decade, marital status and relationship to Person 1.
2. Imputation of a person's marital status by matching the birth decade, birth year, sex and relationship to Person 1.
3. Imputation of Person 1's birth decade by matching the marital status and sex.
4. Imputation of the birth decade of a person other than Person 1 by matching the relationship to Person 1, marital status and sex.
5. Imputation of a person's birth year by matching the relationship to Person 1, the birth decade and the marital status.

Appendix B

Order of Entry of Household Members and Selection Criteria for the Head of the Household

1971

In 1971, the following criteria were used to determine who was the "head of the household":

1. when a husband and wife or parents and their never-married children lived in the same dwelling, the "head" was considered to be the husband rather than the wife and the parent rather than the never-married child;
2. any person of a group sharing a dwelling equally.

1976

For the 1976 Census, the definition of "head of household" was changed: it could be the husband or wife, the father or mother, when only one of the two was living with never-married (single) children, regardless of their age; or any member of a group sharing a dwelling on an equal basis.

1981 and 1986

In 1981, the expression "Person 1" replaced "head of the household" to indicate the reference person in the household, and this concept was retained in 1986. Person 1 was to be chosen in the following manner:

1. one of the spouses (husband or wife) of a married couple living in the same dwelling;
2. either one of two partners living common-law;
3. the father or mother, when only one of them lived with the never-married (single) children, regardless of their age;
4. any adult in the household.

1991

For 1991, Person 1 was to be selected as follows:

- the husband, the wife or one of the partners of a common-law couple living in the dwelling;
- the father or the mother, when only one of the two lived with one or more of the never-married (single) children.

If neither of the above applied, the selection began with any adult living in the household.

Obviously, the changes to the selection criteria were minor and the effect of these criteria on the identification of families is minimal. As for the associated variables, the effect can vary. For example, designating one spouse or another as head or as Person 1 has no effect on the classification of the family as a primary or secondary family, on the family income or on the composition of a household with census family; however, the effect on the characteristics of Person 1 or the head of the household or the family may be greater.

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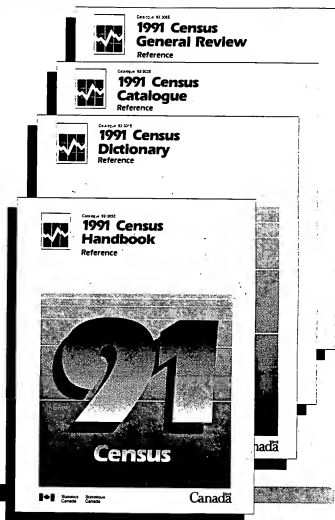
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